Surveillance for Healthcare Associated Infections

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The Renaissance Las Vegas Hotel

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Session Objectives

- State the purpose of healthcare-associated infection (HAI) surveillance
- Identify the types of surveillance appropriate for HAIs
- List the elements of a sound surveillance program

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Session Objectives

- State the main steps in designing and implementing a surveillance program
- Identify methods to prioritize outcomes/processes for surveillance in a facility

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Surveillance

SCENIC: 32%

"The systematic method of collecting, consolidating and analyzing data concerning the distribution and determinants of a given disease or event, followed by dissemination of that data to those who can improve the outcomes."

Lee T, Baker-Montgomery O. Surveillance. In Pfeiffer J ed. APIC Text of Infection Control and Epidemiology. Washington, DC: Association for Professionals in Infection Control and Epidemiology Inc., 2000: 13-1.

Haley et. Al The efficacy of infection surveillance and control programs in preventing nosocomial infections in US hospitals. Amer J Epid 1985; 121,182-205.

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Healthcare-associated Infection (HAI)

A localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s). There must be no evidence that the infection was present or incubating at the time of admission to the acute care setting.

March 2009, NHSN Manual, page 16-4.

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Purposes of Surveillance

- To detect changes in trends or distribution in order to initiate investigation and/or control measures

Baseline → Current

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Purposes of Surveillance

- To set priorities for quality improvement actions
- To use as a basis for costing studies

What is the impact of the disease/condition?

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Purposes of Surveillance

- To evaluate impact of prevention/control measures

Skin prep

Product Change

Prevention Bundle

Isolation Procedures

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Purposes of Surveillance

- To satisfy mandatory and regulated reporting requirements

We HAVE to do it!

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Required Surveillance

- The Joint Commission
  - Goal 7: Reduce the Risk of Healthcare-associated Infections
- Centers for Medicare and Medicaid Services (CMS)
- State Mandates:

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- **NPSG.07.01.01**
- Comply with current World Health Organization (WHO) hand hygiene guidelines or Centers for Disease Control and prevention (CDC) hand hygiene guidelines.
- Compliance with the WHO or CDC hand hygiene guidelines will reduce the transmission by staff to patients of infectious agents, thereby decreasing the incidence of health care–associated infections.
- **Rationale for NPSG.07.01.01**
- **Elements of Performance for NPSG.07.01.01**
- The hospital complies with current World Health Organization (WHO) or Centers for Disease Control and Prevention (CDC) hand **C**
- hygiene guidelines.
- Note: Hospitals are required to comply with 1A, 1B, and 1C of the WHO or CDC guidelines.

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NPSG.07.02.01

- Manage as sentinel events all identified cases of unanticipated death or major permanent loss of function related to a health care–associated infection.
- A significant percentage of patients who unexpectedly die or suffer major permanent loss of function have health care–associated infections. These unanticipated deaths and injuries meet the definition of a sentinel event and, therefore, are required to undergo a root cause analysis. The root cause analysis should attempt to answer the following questions: Why did the patient acquire an infection? Why did the patient die or suffer permanent loss of function?
- **Rationale for NPSG.07.02.01**
- **Elements of Performance for NPSG.07.02.01**
- The hospital manages all identified cases of unanticipated death or major permanent loss of function associated with a health care–associated infection as sentinel events (that is, the hospital conducts a root cause analysis).
- 2. The root cause analysis addresses the management of the patient before and after the identification of infection.

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- **NPSG.07.03.01**
- Implement evidence-based practices to prevent health care–associated infections due to multidrug-resistant organisms in acute care hospitals.
- Note 1: This requirement applies to, but is not limited to, epidemiologically important organisms such as methicillin-resistant Staphylococcus aureus (MRSA), Clostridium difficile (CDI), vancomycin-resistant Enterococci (VRE), and multiple drug-resistant gram negative bacteria.
- Note 2: This requirement has a one-year phase-in period that includes defined expectations for planning, development, and testing (milestones) at three, six, and nine months in 2009, with the expectation of full implementation by January 1, 2010.

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- **NPSG.07.04.01**
- Implement best practices or evidence-based guidelines to prevent central line–associated bloodstream infections.
- Note 1: This requirement covers short- and long-term central venous catheters and peripherally inserted central catheter (PICC) lines.
- Note 2: This requirement has a one-year phase-in period that includes defined expectations for planning, development, and testing
- ("milestones") at three, six, and nine months in 2009, with the expectation of full implementation by January 1, 2010.

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- **NPSG.07.05.01**
- Implement best practices for preventing surgical site infections.
- Note: This requirement has a one-year phase-in period that includes defined expectations for planning, development, and testing ("milestones") at three, six, and nine months in 2009, with the expectation of full implementation by January 1, 2010.

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CMMS

- Current SCIP process reporting:
  - Antbx 60 min before surgery
  - Stop antbx 24 hours after surgery
  - Control postoperative serum glucose in cardiac patients
  - Appropriate preoperative hair removal

http://www.hospitalcompare.hhs.gov/Hospital/Search/Welcome.asp?version=default&browser=IE%7C7%7CWinXP&language=English&defaultstatus=0&pagelist=Home

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CMMS

- Non payment for HAI Outcomes
  - October 2008:
    - CAUTI
    - Mediastinitis s/p CABG
  - October 2009:
    - Orthopedic SSIs *(FUSN, LAM, Shoulder, elbow)*
    - Bariatric SSIs
    - Vascular-associated infections
  - Proposed for 2010
    - Postoperative surgical wound dehiscence
    - Death among surgical patients with serious complications

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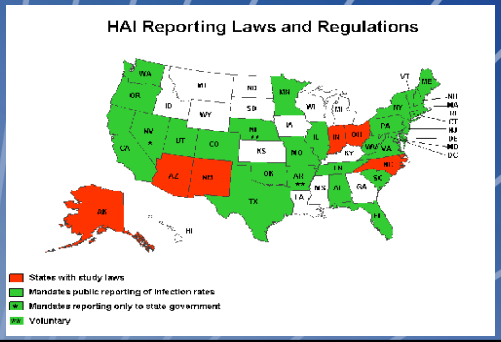
www.apic.org 7/1/09

State Mandates



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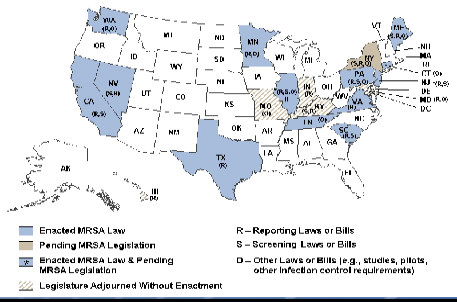
State Mandates

MRSA Laws & Pending Legislation - 2009



Enacted MRSA Law
Pending MRSA Legislation
Enacted MRSA Law & Pending MRSA Legislation
Legislature Adjourned Without Enactment

R – Reporting Laws or Bills
S – Screening Laws or Bills
O – Other Laws or Bills (e.g., studies, pilots, other infection control requirements)

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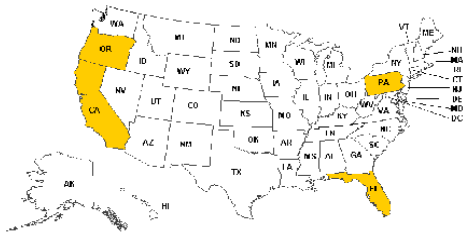
State Mandates

Mandatory HAI Reporting in Long-Term Care



No HAI reporting required
HAI reporting required

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Types of Surveillance

- Passive
- Active
- Sentinel
- Enhanced (limited use)

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Passive Surveillance

- Reports, results are submitted routinely.
- No negative reports.
- Unless prompted no traveling out to "look for" an HAI.

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Active Surveillance

- Exceeds passive
- Additional data sources, methods
- Requires negative reporting

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Sentinel Surveillance

- Uses identified sites/ practitioners in varied locations
- Used for
  - Early identification of seasonal infections
  - Infections that should never occur
  - Infections that are highly contagious and serious

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Approaches to HAI Surveillance

- Comprehensive, total
- Priority based, site-specific

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Comprehensive, Total Surveillance

- Attempts to identify ALL HAIs in facility

Advantages:
Complete picture

Disadvantages:
Unrealistic
Manpower
Not related to specific goals
Collection of data for sake of collection

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Priority-based, Site-specific Surveillance

- Based on facility-specific risk assessment
- Targeted to high volume or risk:
  - procedures
  - interventions
  - populations
- Supplemented with lab reports, staff reports

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Priority-based, Site-specific Surveillance

- Advantages:
  - Surveillance based on identified risks
  - Best use of limited resources
  - Risk adjusted & comparative national rates available
- Disadvantages:
  - Limited knowledge of facility norms
  - May miss problems

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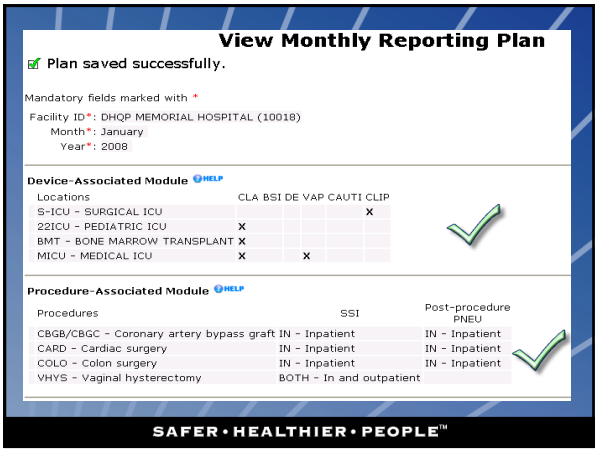

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Elements of Surveillance

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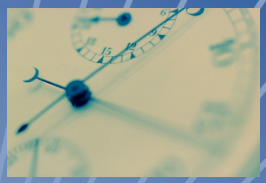
Elements of Surveillance

- Timeliness



daily, twice weekly?

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Elements of Surveillance

- Timeliness
- Accuracy
  - Evidence-based Case Definitions*

*Surveillance Definition of Healthcare-Associated Infection and Criteria for Specific Types of Infections in the Acute Care Setting PDF (1.13 MB / 28 pages)

* McGeer A, Campbell B, Emori TG, et al. Definitions of infection surveillance in long-term care facilities. Am J Infect Control;1991;1-7

http://www.cdc.gov/nhsn/PDFs/pscManual/17pscNosInfDef_current.pdf

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Elements of Surveillance

- Timeliness
- Accuracy
- Consistency
  - Case definitions
  - Case-finding methods
  - Validation

UTI UTI UTI UTI UTI UTI UTI UTI UTI

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Elements of Surveillance

- Timeliness
- Accuracy
- Consistency
- Comprehensiveness

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Data Components

- Patient demographics
  - Name, age or (better) DOB, sex
- Significant med/surg history
- Location
- Risk factors-
  - Surgeries
    - e.g. ASA score, Surgical duration, wound class, surgeon
  - Procedures
    - Bundle elements: VAP, CLABSI, etc
    - Dates of instrumentation (vent, cath)

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Data Components

- Admit and onset dates
- Symptoms *(cough, dysuria, CVA pain, altered mental status)*
- Culture results, lab reports
- Diagnostic imaging results*(CT scans, MRIs*
- Patient outcome
- Disposition *(discharged home, ECF, died)*

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Data Sources

- Microbiology and virology reports
  - Cultures, susceptibilities, antigen testing
- Other laboratory results
  - CSF protein and glucose
  - U/A
- Unit/patient rounds
  - Temperature charts
  - Kardex
  - Charge Nurse

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Data Sources

- Patient record *(physical assessments, cousults: ID, Wound care)*
- Antibiotic orders *(pharmacy report?)*
- Autopsy reports/death listings
- Billing data *(less reliable/accurate)*
- Postdischarge surveillance
  - Admission/readmission sheets
  - Surgeon surveys
  - Patient surveys
  - Outpatient cultures

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Elements of Surveillance

- Timeliness
- Accuracy
- Consistency
- Comprehensiveness
- Practicality

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Elements of Surveillance

- Timeliness
- Accuracy
- Consistency
- Comprehensiveness
- Practicality
- Usefulness

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Elements of Surveillance

- Timeliness
- Accuracy
- Consistency
- Comprehensiveness
- Practicality
- Usefulness
- On-going

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NHSN Surveillance

- Active
- Patient-based
- Prospective

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Steps of Implementation

1. Develop a Surveillance Plan
2. Implement
3. Evaluate

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1. Develop a Surveillance Plan

- Administratively supported

- Reviewed and updated annually
- Starts with a facility assessment

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Facility Assessment

- High Risk
  - Populations
    - Burn patients, oncology, transplants, neonates, dialysis patients etc.
- High Volume
  - Procedures
  - Interventions
    - Central lines, hemodialysis,
- High Impact Infections
  - Long term rehab, loss of function
    - VAPs, Joint Replacements, CABGs
- High Cost Infections

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Develop objectives

- Priorities (from assessment)
- Measurable
- Time Parameters

Consider: Long term vs. short term, Process vs. outcome, data availability, interested partners

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Determine

- Data sources
- Methods
- Partners

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2. Implement

- Collect
- Analyze
- Interpret
- Respond

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Data Collection

- Systematic
- Regular
- Uniform
- Timely

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Analysis

- Numerator/Denominator
  - Device-associated:
    - # infections/# device days
    - Use multiplier of 1000
  - Procedure-associated:
    - # infections/# procedures performed
    - Use multiplier of 100

Ex. CAUTIs: 4/500 = .008 X1000 = 8.0% vs. 4/100 = .025 X1000 =25.0% CAUTI rate

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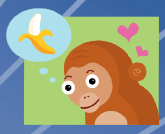
Interpret

Turn the data into information

- Spurious
- True rate change



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Causes of Spurious Data

- Changes in laboratory methods
- Increase in interest in outcome
- Changes in personnel
- Economic effects

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Causes of True Changes in Rates

- Organism
- Host
- Entry

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Respond

- Continue efforts

OR

- Investigate
  - Research
  - Apply
  - Determine course
  - Enact
  - Reassess

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3. Evaluate

3 phases:

1. Pre-implementation
2. Implementation
    1. Objectives met?
    2. Definition clarity
    3. Timeliness
    4. Consistency
    5. Does the data seem reasonable?
3. Feedback

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Summary

- Uses
    - Quality improvement, costing, facility planning
- Facility assessment → Priorities
- Elements
    - Aimed to make the data useful, accurate and timely
- Design and implementation

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